

Enteral nutrition in Macedonian hospitals

Elena Karabeleski^{1*}, Lidija Petrushevska-Tozi², Emilija Kostoska³, Irena Radivojska⁴,
Kristina Mladenovska²

¹*Evropa Lek Pharma DOOEL, St Jadranska Magistrala No. 31, 1000 Skopje, N. Macedonia*

²*Faculty of Pharmacy, Ss. Cyril and Methodius University, Mother Theresa No. 47, 1000 Skopje, N. Macedonia*

³*Zan Mitrev Clinic, St. Bled Agreement No. 8, 1000 Skopje, N. Macedonia*

⁴*PHO City General Hospital 8th September, St. Bled Agreement NN, 1000 Skopje, N. Macedonia*

Introduction

Nutrition products that are delivered *via* the gastrointestinal (GI) tract as tube feeding are valuable option for improving organ function and immune-competence, aiding in recovery process and reducing the convalescence period. Enteral nutrition (EN) is indicated in unconscious patients, disease related malnutrition, anorexia, upper GI obstruction or dysfunction, malabsorption, stroke, etc. EN is recommended even in patients without obvious undernutrition, if the patient will be unable to eat for more than 7 days preoperatively. It is also recommended for patients who are not able to maintain oral intake above 60% of recommended intake for more than 10 days. In addition, delay of surgery for preoperative EN is recommended for patients at severe nutritional risk, with at least one of the following: weight loss > 10–15% within 6 months, BMI < 18.5 kg/m², serum albumin < 30 g/L (with no evidence of hepatic or renal dysfunction). The benefits from EN include: better clinical outcomes; reduction of hospitalizations, complications and deaths; improved quality of life and healthcare savings (Weimanna et al., 2006).

Limited hospital budgets, shortage of trained medical workers and lack of clinical nutrition protocols limit the use of EN in hospitals. The aim

of this study was to demonstrate the availability and use of EN in the Macedonian hospitals. In addition, nurses' perceived barriers for utilizing EN were explored.

Materials and methods

Commercially available EN formulas registered on the Macedonian market were identified by inspection in the Register of Macedonian Food and Veterinary Agency (www.fva.gov.mk/mk/registri-hrana-nezivotinsko-poteklo). Similarly, the data from the Public Procurement Bureau (www.e-nabavki.gov.mk/PublicAccess/home.aspx#/notices) were used to identify the number of enteral food units that were procured by the public hospitals. The data for the average annual number of patients in public hospitals, with average days of hospital stays were extracted from the Macedonian Health Insurance Fund (www.fzo.org.mk/WBStorage/Files/Godisen%20Izvestaj%202017.pdf). Also, a validated questionnaire was used to identify the barriers that hinder nurses from utilizing effective practices of EN. The questionnaire was divided into 6 subscales, including the guideline recommendations and implementation strategies (I), delivery resources (II), dietitian support (III), delivery of EN to the patient (IV), care provider

* ekarabeleski@gmail.com

attitudes and behaviors (V) and economic impact of enteral nutrition for hospitals and patients (VI). Descriptive statistics was used to answer research questions. The respondents (nurses) from public and private hospitals were asked to rate the barrier using five-level Likert scale, from 1 (strongly disagree) to 5 (strongly agree). Data were presented as frequencies and percentages for categorical variables while means and standard deviations were used for continuous variables. A series of independent sample t-tests and analysis of variance (ANOVA) were used to describe differences in the perceived barriers of EN. A total of 50 nurses from four public (74%) and one private hospital (26%) were recruited, 32% with a bachelor degree and between 1 and 36 years' experience in nursing.

Results and discussion

EN formulas are registered on the Macedonian market, including polymeric formulas, which contain whole proteins and are intended for patients with normal digestion and absorption (300–500 mOsm/kg, 1–1.2 kcal/mL, 30–40 g protein/L); semi-elemental peptide feeds, indicated for patients with disputed GI function, who need partially hydrolyzed nutrients for better digestion and absorption (osmolarity depends on the level of hydrolysis, 1–1.2 kcal/mL, 30–45 g protein/L); and disease specific enteral formulas, designed for specific clinical conditions. In addition, EN formulas from 0-1 year, 1-8 years, < 1 year and adult formulas are also available.

From 55 public hospitals in total (27 university clinics, 3 public clinical, 9 special, 13 public general and 3 psychiatric hospitals), in only 20% of them EN was administered to the patients, in limited quantities. The annual number of patients in public health institutions was 208.997 in 2017, with average hospital stay of 5.5 days, while the number of EN bottles planned for purchasing 7.680 bottles of 500 mL/500 kcal. Having these in regard as well as the number of patients admitted to surgical units in 2017 (72.026 patients), their average hospital stay (4.45 days) and daily intake of EN 1000 kcal, to 1% of all hospitalized patients, EN was administered.

Percent of answers ranged between 98-100%. Majority of respondents in the public hospitals were undecided/neutral for most of their responses

(mean±SD I: 3.40±1.12, II: 3.58±0.95, IV: 3.48±0.84, V: 3.96±0.61), disagreeing that the EN is significant financial burden for the hospital and patients (mean±SD VI: 2.54±0.74) and that the dietitian support is sufficient for providing EN and monitoring and evaluation of EN outcomes (mean±SD III: 2.39±0.84). No significant difference in majority of responses was observed between the nurses employed in public and private hospitals. However, statistically significant difference was obtained when the support of dietitian was compared (mean±SD III: 2.39±0.84 vs. 3.26±1.23, accordingly, $p=0.0067$). As most important barriers for public hospitals, lack of dietitian support was emphasized i.e. need of one dietitian at least, with full working hours (incl. night shifts, weekends and holidays), educated to provide nutrition screening for risk of malnutrition for each hospitalized patient, to monitor and evaluate outcome of EN and provide training for patients how to administer EN after discharge.

Conclusion

The needs of screening for nutritional risk in hospitals and early nutritional protocols have been already recognized, having in regard that one in four patients admitted to hospital have disease-related malnutrition and about 30% of all hospitalized patients are undernourished or their undernutrition develops further when admitted to hospital (Kondrup et al., 2003). Participants in this study moderately perceived barriers for EN in Macedonian hospitals, with more focus on dietitian support. This barrier is modifiable and can be managed by setting a multi-disciplinary team in the hospitals, with a dietitian specialized for EN, and by education for clinical nutrition as a part of multidisciplinary approach in the treatment of hospitalized patients.

References

- Kondrup, J., Allison, S.P., Elia, M., Vellas, B., Plauth, M., 2003. ESPEN Guidelines for Nutrition Screening 2002. *J. Clin. Nutr.* 22, 415–421.
- Weimanna, A., Bragab, M., Harsanyic, L., Lavianod, A., Ljungqviste, O., Soetersf, P., 2006. ESPEN Guidelines on Enteral Nutrition: Surgery including organ transplantation. *J. Clin. Nutr.* 25, 224–244.